CLAIMS

What is claimed is:

1. An isolated polypeptide comprising residues 41-150 of SEQ ID NO:2 or residues 32-141 of SEQ ID NO:4.

2. The isolated polypeptide of claim 1 which is not more than 1800 amino acid residues in length.

3. The isolated polypeptide of claim 2, wherein said residues 41-150 of SEQ ID NO:2 or residues 32-141 of SEQ ID NO:4 are operably linked to a second polypeptide selected from the group consisting of maltose binding protein, an immunoglobulin constant region, a polyhistidine tag, a peptide as shown in SEQ ID NO:7, and a peptide linker consisting of up to 25 amino acid residues.

4. The isolated polypeptide of claim 1, comprising residues 41-150 of SEQ ID NO:2.

5. The isolated polypeptide of claim 4, comprising a sequence of amino acid residues selected from the group consisting of:

residues 41-412 of SEQ ID NO:2; and
residues 41-452 of SEQ ID NO:2.
residues 35-150 of SEQ ID NO:2;
residues 35-412 of SEQ ID NO:2; and
residues 35-452 of SEQ ID NO:2.

6. The isolated polypeptide of claim 5 further comprising an immunoglobulin constant region domain and hinge region.

7. A dimerized polypeptide fusion comprising two polypeptide chains, each of said chains comprising residues 41 to 150 of SEQ ID NO:2 joined to an IgG constant region domain and hinge region.

8. The dimerized polypeptide fusion of claim 7, wherein each of said chains comprises residues 41 to 412 of SEQ ID NO:2 joined to an IgG constant region domain and hinge region.

9. An isolated polynucleotide encoding residues 41-150 of SEQ ID NO:2 or residues 32-141 of SEQ ID NO:4.

10. An expression vector comprising the following operably linked elements:

(a) a transcription promoter;

(b) a DNA segment encoding a polypeptide comprising a sequence of amino acid residues selected from the group consisting of:

residues 41-150 of SEQ ID NO:2;
residues 41-412 of SEQ ID NO:2;
residues 41-452 of SEQ ID NO:2;
residues 35-150 of SEQ ID NO:2;
residues 35-412 of SEQ ID NO:2;
residues 35-452 of SEQ ID NO:2;
residues 32-141 of SEQ ID NO:4;
residues 32-244 of SEQ ID NO:4;
residues 26-141 of SEQ ID NO:4; and
residues 26-244 of SEQ ID NO:4; and

(c) a transcription terminator.

11. The expression vector of claim 10 further comprising a secretory signal sequence operably linked to the DNA segment.

12. The expression vector of claim 11, wherein the secretory signal sequence encodes residues 1-34 of SEQ ID NO:2 or residues 1-25 of SEQ ID NO:4.

13. The expression vector of claim 10 wherein said polypeptide further comprises a maltose binding protein, an immunoglobulin constant region, a polyhistidine tag, a peptide as shown in SEQ ID NO:7, or a peptide linker consisting of up to 25 amino acid residues.

14. The expression vector of claim 13 wherein said polypeptide further comprises an immunoglobulin constant region domain and hinge region.

15. A cultured cell into which has been introduced the expression vector of claim 10, wherein said cell expresses said DNA segment.

16. A method of making a protein comprising:

culturing the cell of claim 15 under conditions whereby the DNA segment is expressed and the polypeptide is produced; and

recovering the polypeptide.

17. The method of claim 16 wherein the expression vector comprises a secretory signal sequence operably linked to the DNA segment, and wherein the polypeptide is secreted by the cell and recovered from a medium in which the cell is cultured.

18. A polypeptide produced by the method of claim 16.

19. An antibody that specifically binds to the polypeptide of claim 1.